

Hydrologic Setting

The valley-fill aquifer system described herein encompasses approximately 30 mi² (square miles) in southern Tioga and Chemung Counties in New York and northern Bradford County in Pennsylvania. This aquifer system underlies the Susquehanna River, Chemung River, and Cayuta Creek valleys and consists of a surficial (unconfined) sand and gravel aquifer and a thin, confined sand and gravel aquifer that occupies parts of the Susquehanna and Chemung River valleys. The surficial aquifer, which is the main aquifer used for municipal, industrial, and irrigation supply, ranges in saturated thickness from zero to 90 feet (sheet 4). The confined sand and gravel aquifer is discontinuous and is overlain by a thick sequence of lacustrine silt and clay within the Susquehanna River, Chemung River, and the most downstream part of the Cayuta Creek valleys (sheet 5), and probably was deposited as outwash or subaqueous fan deposits. Its thickness ranges from zero to about 15 ft in most places, but can exceed 30 ft locally where the aquifer consists of ice-contact sand and gravel. This confined aquifer has been successfully utilized by local drillers who have completed many domestic wells in it.

LOCATIONS OF WELLS AND TEST HOLES

This sheet shows the locations of wells and test holes from which hydrogeologic data used in this report were obtained. Most of the data were compiled from previously published geologic reports and a Master's thesis pertaining to the Waverly-Sayre area and the Susquehanna basin. Most of the well data from New York were compiled by Randall (1972), and most of the well data from Pennsylvania were compiled by Werkheiser (1987, unpublished) and later published in Williams and others (1998). These data were supplemented with more recent well records in New York provided by the NYSDEC. The wells and test holes represented here are identified by a four-digit number that corresponds to the seconds of latitude and longitude of the well location. For example, a well with a latitude of 42°04'40" and a longitude of 76°31'58" is identified by the number 40-58. This is the numbering system used by Randall (1972) and is retained in this report to allow for cross-referencing to that report. In addition, all wells in Pennsylvania, and those in New York, are further identified by a local county number, designated with a prefix of (Br) for Bradford County, (Cm) for Chemung County, and (Ti) for Tioga County, and are shown in parentheses next to the four-digit number. Well data for New York can be obtained by accessing the National Water Information System (NWIS) through the USGS New York District web site at <http://ny.waterdata.usgs.gov/nwis/gw>. Similarly, well data for Pennsylvania can be obtained by accessing NWIS through the USGS Pennsylvania District web site at <http://waterdata.usgs.gov/pa/nwis/gw>.

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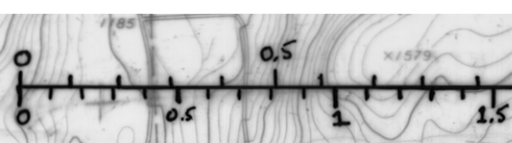
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EXPLANATION

Note: Four-digit hyphenated numbers represent well location, in seconds of latitude and longitude. Decimal-sequence numbers indicate wells sharing the same location. Number in parentheses is county well number, assigned by U.S. Geological Survey. The prefixes used are: (Ti) for Tioga County, (Br) for Bradford County, and (Cm) for Chemung County.

- 32-02 (Ti-512) DOMESTIC WELL—Completed in the surficial stratified drift (sand and gravel) aquifer, which is under unconfined (water-table) conditions.
- 43-38 (Br-674) DOMESTIC WELL—Completed in the confined sand and gravel aquifer.
- 38-26 (Ti-507) DOMESTIC WELL—Completed in bedrock.
- 42-47 (Br-730) DOMESTIC WELL—Completed in till. Generally a large-diameter dug well.
- 40-58 (Ti-518) PUBLIC SUPPLY WELL—Large-capacity well serving municipal water-supply systems. Screened in surficial (water-table) aquifer.
- 10-40 (Ti-511) COMMERCIAL, INDUSTRIAL, OR IRRIGATION WELL—Large-capacity well serving commercial, industrial, or agricultural water users. Screened in surficial (water-table) aquifer.
- 54-15 (Br-768) COMMERCIAL, INDUSTRIAL, OR IRRIGATION WELL—Large-capacity well serving commercial, industrial, or agricultural water users. Screened in the confined sand and gravel aquifer.
- 05-27 (Ti-519) COMMERCIAL, INDUSTRIAL, OR IRRIGATION WELL—Moderately large-capacity well serving commercial, industrial, or agricultural water users. Completed in bedrock.
- ⊗ 44-21 (Br-801) OBSERVATION WELL—Used for collection of ground-water quality and water-level data; includes exploratory wells in which casing was installed.
- Ⓢ 59-26b TEST HOLE—Test hole or test boring used to define subsurface characteristics for engineering construction properties or as an exploratory hole for water-supply investigations; no casing installed. Suffix "b" indicates test boring. Logs of test borings in New York are published in Randall (1972). Test borings in Pennsylvania were drilled primarily as part of highway bridge construction projects. The number in parentheses (e.g., B6) indicates the particular boring number as taken from bridge boring plans on file with the Pennsylvania Department of Transportation.
- AQUIFER BOUNDARY—Indicates contact between surficial aquifer in the Susquehanna River, Chemung River, and Cayuta Creek valleys and bedrock or till on the valley walls.

A — A' TRACE OF GEOLOGIC SECTION—Geologic sections are depicted on sheet 6.



Base from U.S. Geological Survey
1:24,000 Series: Waverly, NY-PA (1978);
Sayre, PA-NY (1969); Litchfield, PA-NY (1978)
Barton, NY-PA (1976)

HYDROGEOLOGY OF THE WAVERLY-SAYRE AREA IN TIOGA AND CHEMUNG COUNTIES, NEW YORK AND BRADFORD COUNTY, PENNSYLVANIA

By
Richard J. Reynolds
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Sheet 1 - Location of Wells and Test Holes

For additional information write to:
District Chief, U.S. Geological Survey, 425 Jordan Road, Troy, NY 12180

Copies of this report are available on-line at <http://ny.usgs.gov> or can be purchased from:
U.S. Geological Survey, Branch of Information Services, Box 25286, Denver, CO 80225-0286